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Ikegami Electronics (Europe) GmbH
Mr. Motoki
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Vorsitzender des Aufsichtsrates:
Uwe Thomas

Geschäftsführer:
Prof. Dr. Clemens Baac
Dr. Wolfgang Grunow

Ihr Zeichen	Unser Zeichen	Unser Bearbeiter	Tel.-Durchwahl	Berlin,
	Ma/Wei	Prof. Mahler	220	19.8.87

Dear Mr. Motoki,

as you know we still encounter serious troubles when using our Ikegami HDTV camera HDK 1125 due to smearing effects and dramatic loss of resolution with moving objects or panning. To find reasons and possibly cures for this the lag performance of H 4186 tubes was measured in Tokyo as reported by the letter of Mr. Inoue of April, 8. Using the same method the lag of the newly inserted spare tubes of our camera had to be measured for comparison as recommended in the letter.

This was done here in Berlin by Mr. Mitsui on April, 29. Later, it became clear that the measurement procedure used lends itself to ambiguous results by principle and had also not been correctly evaluated, so the lag figures obtained were wrong.

Subsequently, we developed a more precise measuring set up applying a LED (red, green or blue respectively) as the light source. The LED image is enlarged optically so its circular area covers at least 20% of the picture. LED is on for 20 seconds and off for 20 seconds periodically. The switching of light is triggered by horizontal syncs and a line selector driven by H_D and V_D from the camera. When the light is switched off a measuring window of 1,2µs is opened within the line being scanned subsequently. The value sampled represents the read-out from a 100% charge pattern and is held for one field period. Then the adjacent interlaced line is scanned and the window is again opened for sampling the remaining charge after one field period of darkness. The sample-and-hold process is repeated for the following field intervals fixed to the selected window position on the two alternating lines mentioned. Eight on/off cycles of illumination are performed, the results are averaged and displayed by a digital storage oscilloscope with expanded vertical scale (10mV/div.).

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A typical lag performance analyzed this way is shown in Fig. 1. It was obtained from the green channel of our Ikegami camera at the CCU output, while 700mV signal across 75 Ω resulted from LED light, bias light off.

CCU controls were set as follows:

γ...off knee...off white clip...on gain...normal
equalizer 2...off flare...off DTL...off

Percentage of signal with the third scan after the last 100% read-out (after 50msec of darkness) was for the green channel

Illumination	Bias L off	Bias L on
for 700mV	2.7%	2.1%
for 140mV	7.7%	4.7%

These figures are well within the specifications of Saticon I targets. While they are somewhat worse than those of Saticon III (1.5% typical) the difference could by no means explain why the smearing effects observed with our camera are much more pronounced compared to second generation HDTV cameras, so that it can be used in practice for shooting still pictures only. Thus the lag measurements have given no hint for further actions.

By the way, when trying to measure the lag of the red tube we discovered a spurious effect being present in the red channel of our camera HDTK 1125. With the expanded vertical scale of the scope a disturbing difference of signal levels between successive fields became apparent, so the lag measurement could not be performed (see Fig. 2). We suppose a fault in clamping circuitries. For perpect operation it should be corrected.

Please, pass these comments to Tokyo. I hope we can find a solution to our problem.

Sincerely

(Prof. Dr. G. Mahler)

encl.: Fig.1, Fig.2

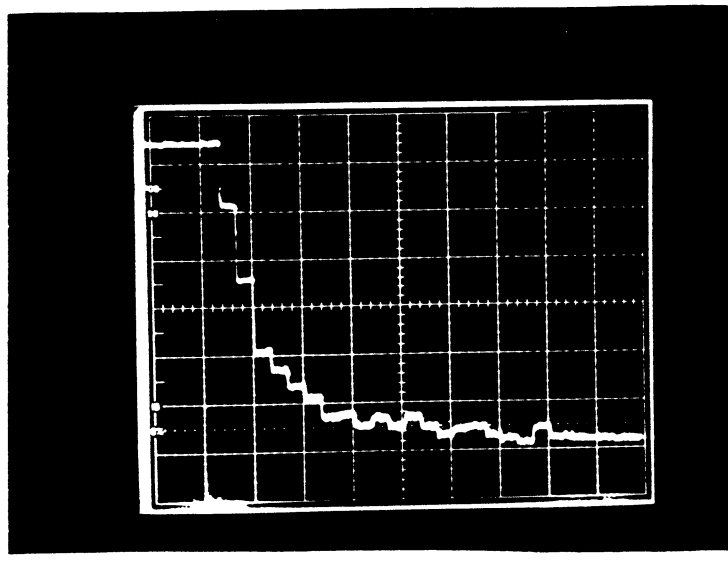

Fig. 1. Lag measurement from CCU output, green channel, HDK 1125, full drive (700mV), signals shown with 10mV/div.

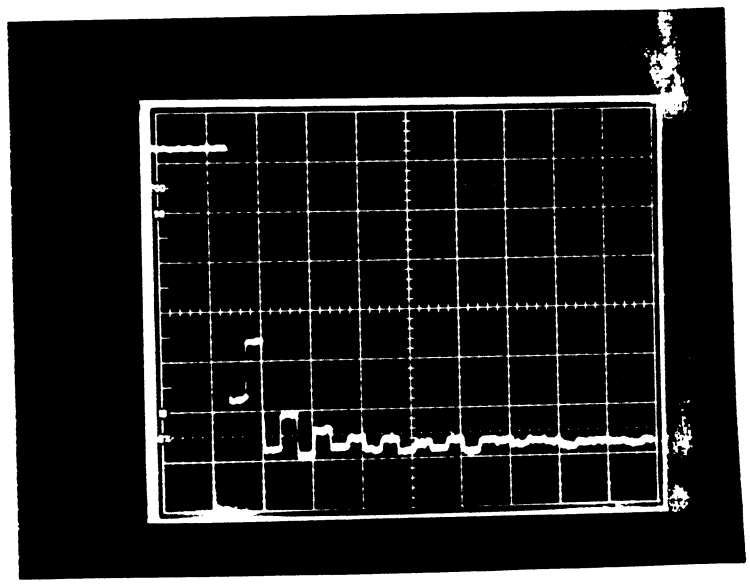

Fig. 2. Faulty red channel during lag measurement, same conditions as with Fig. 1